VOL. 14 • NO. 2
MAY 2007

MSMR

A publication of the Armed Forces Health Surveillance Center



MEDICAL SURVEILLANCE MONTHLY REPORT

INSIDE THIS ISSUE:

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Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
MAY 2007		**00-00-2007 to 00-00-2007**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Medical Surveillance Monthly Report (MSMR). Volume 14, Number 2, May 2007	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **U.S. Army Center for Health Promotion and Preventive Medicine,Armed Forces Health Surveillance Center (AFHSC),2900 Linden Lane, Suite 200,Silver Spring,MD,20910**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**24**	

Hospitalization Experience within One Year after Returning from Afghanistan or Iraq, January 2002-September 2006

A main objective of deployment health surveillance is the detection and characterization of significant deployment-related health effects that are clinically manifested or exacerbated after redeployment. The task is complex for several reasons.

First, exposures with significant health effects are likely to vary in relation to the natures, locations, and timing of activities while deployed. For example, in Iraq, soldiers and Marines assigned to ground combat units in 2003 likely had different experiences and exposures than those in 2006. Also, service members who shared risky exposures while deployed may disperse to assignments throughout the world – or leave active military service – relatively soon after returning. In turn, individuals who may have been affected by deployment-related exposures with delayed clinical manifestations may seek care after redeployment in diverse clinical settings – in and outside of the military health system. Finally, the clinical manifestations of deployment-related exposures with delayed or long-term health effects are often nonspecific and relatively common among service members in general, e.g., fever, headache, weight loss, fatigue, joint pain, alcohol abuse, sleep disturbance, depression. Thus, in clinical settings, it is difficult to attribute nonspecific signs and symptoms among recent redeployers to deployment-related experiences or exposures.

Comparisons of the medical experiences of service members who returned from Afghanistan/Iraq at different times (using centralized health surveillance data) may enable the detection and characterization of deployment-related exposures that varied over time. The objective of this analysis was to describe the variability of the hospitalization experiences of serial cohorts of U.S. service members within one year after they returned from deployments in Afghanistan or Iraq.

Methods:

The surveillance period was 1 January 2002 to 31 March 2007. The surveillance population included all members of active components of the U.S. Armed Forces who completed deployments to Afghanistan or Iraq between 1 January 2002 and 30 September 2006 (based on deployment rosters routinely provided to the Defense Medical Surveillance System by the Defense Manpower Data Center). If service members had more than one completed deployment during the period, only the last was used for analysis.

The surveillance population was divided into cohorts of redeployers with similar redeployment dates. For this analysis, ten cohorts were formed from all redeployers during the first and second halves of each calendar year of the surveillance period. Thus, cohort 1 consisted of all redeployers from 1 January to 30 June 2002; cohort 2 consisted of all redeployers from 1 July to 31 December 2002; cohort 3 consisted of all redeployers from 1 January to 30 June 2003; cohort 4 consisted of all redeployers from 1 July to 31 December 2003; and so on.

For each member of each cohort, all hospitalizations after the start of the subject's most recent deployment were identified by the first 3 digits of the ICD-9-CM code of the primary (first-listed) discharge diagnosis and then grouped by major diagnostic categories. If an individual had more than one hospitalization for the same diagnostic category after the start of his/her last deployment, only the earliest was kept for analysis ("incident hospitalization, by category"). If a person's first hospitalization after deploying was before the reported end date of the subject deployment, the individual was considered redeployed on the day of the hospitalization.

For each cohort member, postdeployment follow-up time extended from the day of his/her redeployment to the earliest of the following: 365 days after redeployment; termination of military service plus 90 days (for most cohort members, the end of eligibility for care through the Military Health System); or the end of the surveillance period.

For each cohort, total follow-up times in each of twelve sequential 30-day intervals after redeployment were calculated, where interval 1 was 1-30 days after redeployment; interval 2 was 31-60 days after redeployment; interval 3 was 61-90 days after redeployment; interval 4 was 91-120 days after redeployment; and so on. Numbers and rates of hospitalizations – overall and in each major diagnostic category – were calculated for each 30-day interval ("month" for analysis purposes) after redeploying.

Finally, for each cohort, numbers, rates, and excesses of hospitalizations (based on the first 3-digits of ICD-9-CM codes of primary diagnoses) were summarized during the first 360 days ("year" for analysis purposes) after redeploying. For each cohort, "excesses" of hospitalizations for each diagnosis were calculated by subtracting the observed from the expected numbers of hospitalizations (where expected hospitalizations were the number that would have occurred if the same rate had occurred in the subject cohort as in all other cohorts combined). Finally, the "excess case rate" was calculated by dividing the excess hospitalizations for the diagnosis of interest by the total person-years of follow-up of the affected cohort during the first year after redeploying.

Results:

According to routinely maintained records, during the surveillance period, 552,101 active component service members returned from deployments in Afghanistan and/or Iraq. Within the first 360 days after redeploying, these service members were eligible for care in the Military Health System during approximately 483,754 person-years (p-yrs) of follow-up.

There were significant differences in the numbers (and periods of follow-up) of service members in the ten cohorts defined for this surveillance. The median number of service members per cohort was 68,392; the range was 2,768 (cohort 1) to 114,357 (cohort 9). The median post-deployment follow-up time per cohort was 53,378 person-years; the range was 2,495 (cohort 1) to 104,262 (cohort 9). Other than cohort 10 (whose members redeployed during the second half of 2006), the cohorts had fairly similar "completeness of follow-up" experiences during the first 360 days after redeploying (mean days of follow-up per cohort member [except cohort 10]: 314 [cohort 4]-341 [cohort 2]).

Hospitalizations (all causes), overall:

Overall, there were 21,198 incident (per diagnostic category) hospitalizations during the first 360 days after redeploying. The crude incidence rate during the 360 days after redeploying was 43.8 hospitalizations per 1,000 p-yrs of follow-up. In general, hospitalization rates increased by approximately 1% per month during the year after redeploying **(Figure 1)**. The lowest hospitalization rates were in the first (41.5 per 1,000 p-yrs) and second (40.7 per 1,000 p-yrs) months after redeploying, and the highest hospitalization rates were in the tenth (47.2 per 1,000 p-yrs) and eleventh (46.8 per 1,000 p-yrs) months after redeploying **(Figure 1)**.

Hospitalizations, by cause, overall:

Among all redeployers, the most hospitalizations during the first 360 days after redeploying were for injuries and poisonings (8.0 per 1,000 p-yrs), mental disorders (6.4 per 1,000 p-yrs), pregnancy-related conditions (6.1 per 1,000 p-yrs), musculoskeletal and connective tissue disorders (5.1 per 1,000 p-yrs), digestive disorders (4.3 per 1,000 p-yrs), and

Figure 1. Rate of incident hospitalizations (per diagnostic category) within one year after returning from Afghanistan/Iraq, by time of redeployment between January 2002 and December 2006, active components, U.S. Armed Forces

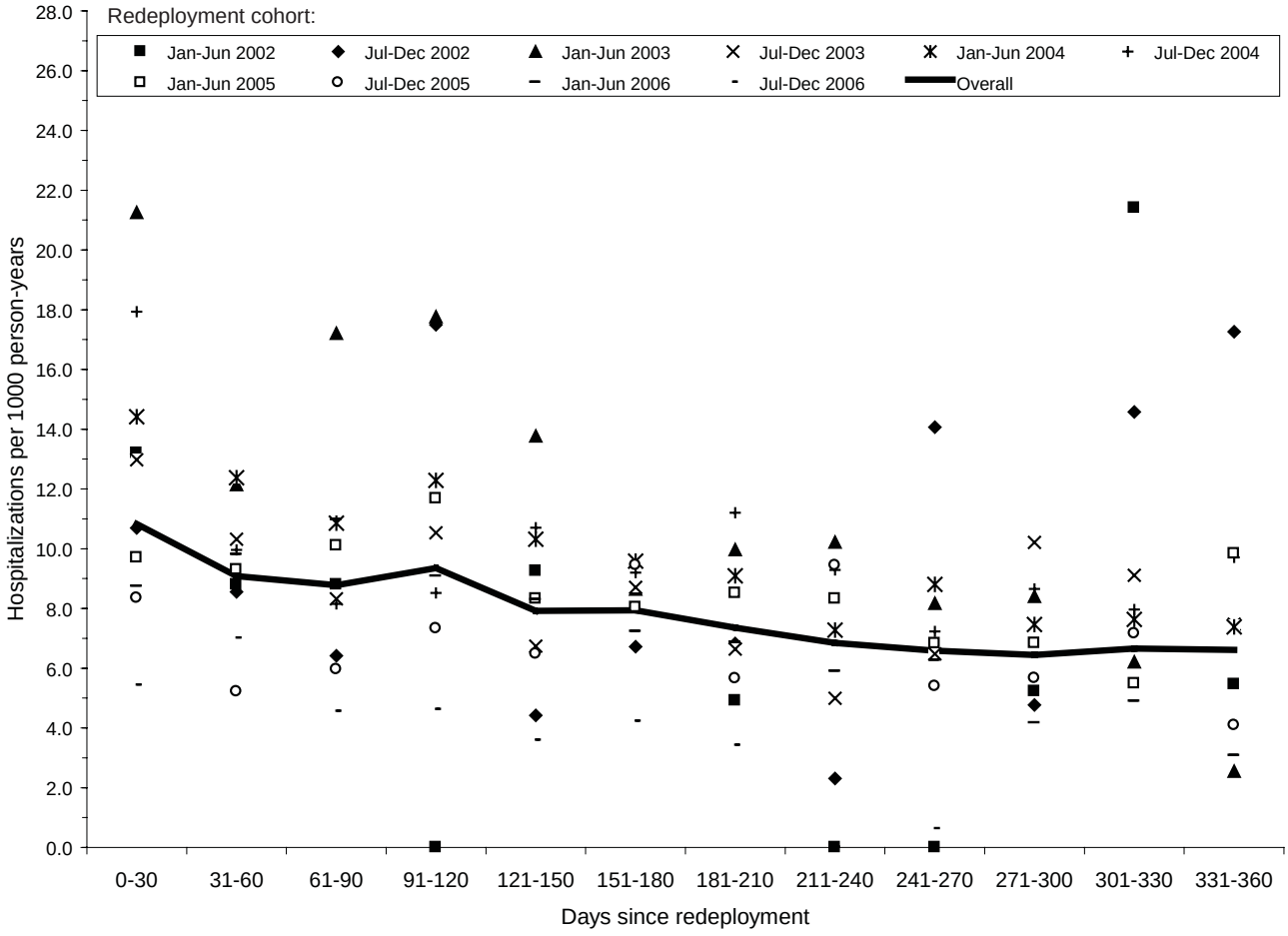


Table 1. Numbers and rates of incident hospitalizations per diagnostic category* among redeployers from Afghanistan/Iraq, by time of redeployment between January 2002 and December 2006, active components, U.S. Armed Forces

	Cohort 1 Jan-Jun 2002		Cohort 2 Jul-Dec 2002		Cohort 3 Jan-Jun 2003		Cohort 4 Jul-Dec 2003		Cohort 5 Jan-Jun 2004	
	n	Rate†	n	Rate†	n	Rate†	n	Rate†	n	Rate†
Infectious, parasitic diseases	0	0.0	4	0.8	18	1.7	39	1.2	58	0.9
Neoplasms	4	1.6	8	1.5	15	1.4	36	1.1	83	1.3
Endocrine, nutrition, metabolic, immunity	0	0.0	4	0.8	4	0.4	20	0.6	31	0.5
Hematologic disorders	1	0.4	1	0.2	2	0.2	12	0.4	9	0.1
Mental disorders	17	6.8	37	7.0	93	8.5	239	7.6	580	8.8
Nervous system, sensory organs	5	2.0	3	0.6	18	1.7	27	0.9	64	1.0
Circulatory system	4	1.6	10	1.9	22	2.0	61	1.9	110	1.7
Respiratory system	2	0.8	9	1.7	15	1.4	48	1.5	93	1.4
Digestive system	10	4.0	17	3.2	63	5.8	188	6.0	323	4.9
Genitourinary system	1	0.4	9	1.7	25	2.3	72	2.3	128	1.9
Pregnancy-related	13	5.2	35	6.6	122	11.2	327	10.4	507	7.7
Skin and subcutaneous diseases	3	1.2	6	1.1	18	1.7	27	0.9	93	1.4
Musculoskeletal, connective tissue disorders	10	4.0	29	5.5	96	8.8	175	5.6	385	5.8
Congenital	0	0.0	1	0.2	5	0.5	13	0.4	21	0.3
Signs, symptoms, and Ill-defined conditions	12	4.8	12	2.3	56	5.1	120	3.8	236	3.6
Injuries, poisonings	18	7.2	50	9.4	127	11.7	271	8.6	653	9.9
Other (V and E codes of ICD-9-CM)	2	0.8	9	1.7	18	1.7	54	1.7	114	1.7
Total	102	40.9	244	45.9	717	65.9	1,729	55.1	3,488	52.8
Total excluding pregnancy-related	89	35.7	209	39.4	595	54.7	1,402	44.6	2,981	45.1

*Includes first hospitalization per person in the subject diagnostic category
†Incident hospitalizations per 1,000 person-years of follow-up within 365 days after redeployment

signs, symptoms and ill-defined conditions (2.9 per 1,000 p-yrs) **(Table 1).** No other category of illnesses or injuries had a hospitalization rate higher than 2.0 per 1,000 p-yrs **(Table 1).**

Of the diagnostic categories that accounted for the most hospitalizations, rates for injuries and poisonings generally declined during the first 10 months after redeploying; rates for musculoskeletal and connective tissue disorders tended to increase during the first six months after redeploying; and rates for pregnancy-related conditions sharply increased to a relative plateau approximately 10 months after redeploying **(Figure 2a-c).** There was a small peak in hospitalizations for mental disorders in the fourth to fifth months after redeploying **(Figure 2d).** Finally, rates of hospitalization for other conditions remained relatively stable throughout the first year after redeploying (data not shown).

Hospitalizations, by cohort:

Among cohorts of redeployers, the highest hospitalization rate (all causes) during the first 360 days after redeploying affected cohort 3 which redeployed from January-June 2003 **(Table 1, Figure 3).** Hospitalization rates during the first year after deploying were generally higher among cohorts that redeployed in 2003 and 2004 than those that redeployed earlier or later **(Table 1, Figure 3).** Cohorts that redeployed in 2003 and 2004 had particularly high rates of hospitalization for injuries and poisonings, mental disorders, musculoskeletal and connective tissue disorders, digestive disorders, and signs, symptoms, and ill-defined conditions **(Table 1, Figure 4).**

In general, across cohorts, there was variability in the temporal patterns of hospitalization rates during the first year after redeploying **(Figure 3).** Of note, however, for each cohort, the highest monthly hospitalization rate was four months or later after redeploying (largely due to steadily increasing numbers of pregnancy-related hospitalizations during the first year after redeployment) **(Figure 2c).** Excluding pregnancy-related hospitalizations, the highest hospitalization rates tended to be in the first four months after redeploying; and for all cohorts except one, the lowest monthly hospitalization rate was seven months or later after redeploying **(Figure 3).**

Excess hospitalizations for specific conditions, by cohort:

Relative to all other cohorts combined, each cohort that redeployed between January 2002 and December 2004 (cohorts 1-6) had "excess" hospitalizations for at least one condition (at the 3-digit level of the ICD-9-CM) **(Table 2).** Service members who redeployed between July and December 2003 (cohort 3) had nominally excessive hospitalizations for 14 conditions (excluding pregnancy-related) **(Table 2).** Of note, no cohort that returned later than December 2004 had excessive hospitalizations for any conditions (compared to

Table 1. *(Con't)* Numbers and rates of incident hospitalizations per diagnostic category* among redeployers from Afghanistan/Iraq, by time of redeployment between January 2002 and December 2006, active components, U.S. Armed Forces

Cohort 6 Jul-Dec 2004		Cohort 7 Jan-Jun 2005		Cohort 8 Jul-Dec 2005		Cohort 9 Jan-Jun 2006		Cohort 10 Jul-Dec 2006		Overall Jan 2002-Dec 2006	
n	Rate†	n	Rate†	n	Rate†	n	Rate†	n	Rate†	n	Rate†
54	0.9	54	0.7	48	0.6	94	0.9	27	0.6	396	0.8
82	1.3	79	1.0	78	1.0	71	0.7	27	0.6	483	1.0
23	0.4	36	0.4	35	0.5	48	0.5	17	0.4	218	0.5
17	0.3	9	0.1	20	0.3	25	0.2	12	0.3	108	0.2
440	7.2	455	5.6	450	6.0	600	5.8	208	4.6	3,119	6.4
71	1.2	68	0.8	51	0.7	80	0.8	19	0.4	406	0.8
96	1.6	126	1.5	101	1.3	126	1.2	32	0.7	688	1.4
130	2.1	99	1.2	90	1.2	157	1.5	27	0.6	670	1.4
325	5.3	375	4.6	304	4.0	378	3.6	119	2.6	2,102	4.3
110	1.8	122	1.5	108	1.4	130	1.2	49	1.1	754	1.6
389	6.3	462	5.7	504	6.7	503	4.8	96	2.1	2,958	6.1
80	1.3	124	1.5	109	1.5	121	1.2	38	0.8	619	1.3
419	6.8	406	5.0	366	4.9	460	4.4	122	2.7	2,468	5.1
19	0.3	23	0.3	10	0.1	21	0.2	2	0.0	115	0.2
250	4.1	240	2.9	202	2.7	228	2.2	61	1.3	1,417	2.9
610	9.9	704	8.6	502	6.7	757	7.3	185	4.1	3,877	8.0
141	2.3	112	1.4	145	1.9	159	1.5	46	1.0	800	1.7
3,256	53.0	3,494	42.9	3,123	41.6	3,958	38.0	1,087	24.0	21,198	43.8
2,867	46.6	3,032	37.2	2,619	34.9	3,455	33.1	991	21.9	18,240	37.7

their respective counterparts) **(Table 2).**

Of note, compared to their respective counterparts, members of cohorts that redeployed between January 2002 and June 2004 (cohorts 1-5) had excessive hospitalizations for "affective psychoses" **(Table 2).** Among these cohorts, service members who redeployed between January and June 2004 (cohort 5) had the highest number (approximately 40) of excess hospitalizations for affective psychoses, while those who redeployed between July and December 2003 (cohort 4) had the highest rate (1.10 per 1,000 person-years) of excess hospitalizations for affective psychoses **(Table 2).**

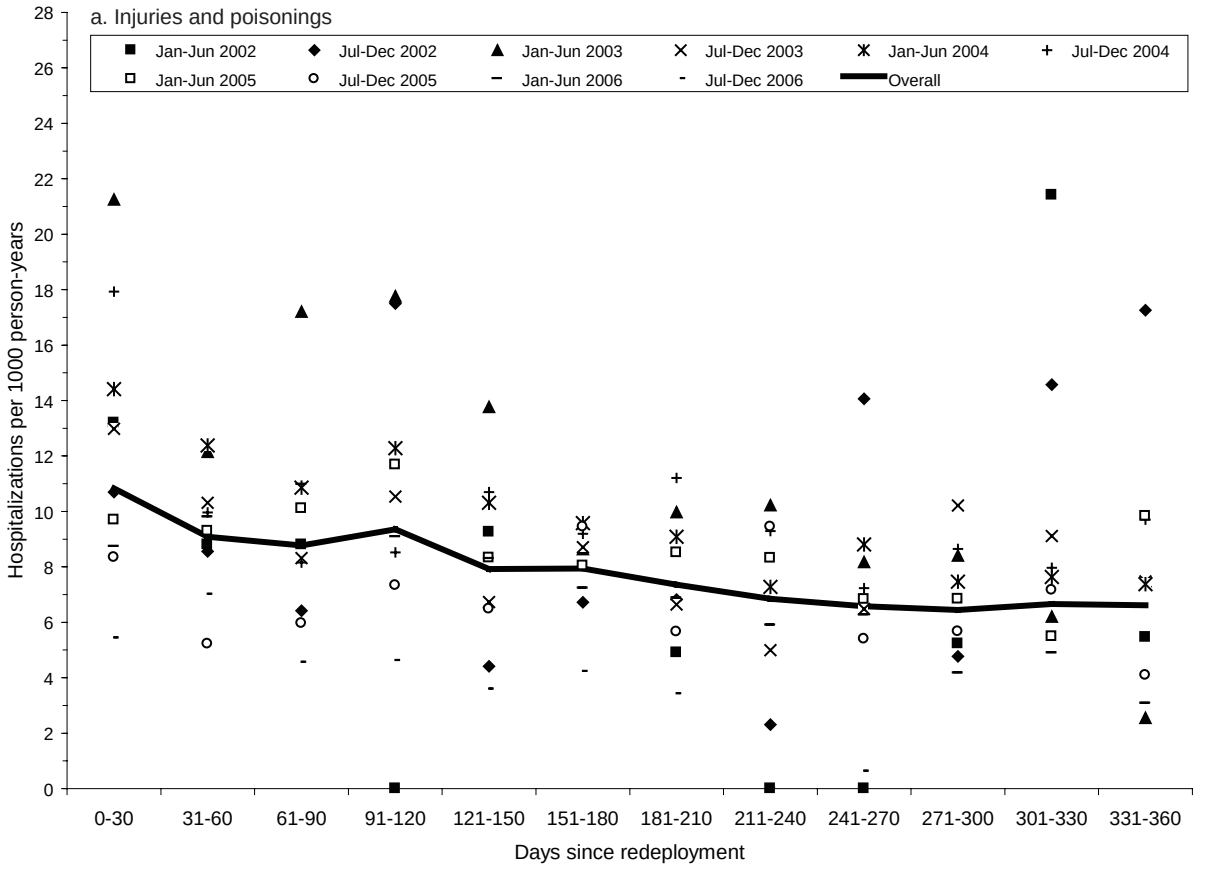
Finally, compared to their respective counterparts, service members who redeployed between January 2003 and June 2004 (cohorts 3-5) had approximately 117 excess hospitalizations for "adjustment reactions" (which includes post-traumatic stress disorder) **(Table 2).** Among these cohorts, service members who redeployed between January and June 2003 (cohort 3) had the highest rate of excess hospitalizations for adjustment reactions (2.72 per 1,000 person-years) in the year after redeployment **(Table 2).**

Editorial comment:

This report documents variability across cohorts of redeployers in the frequencies and natures of hospitalizations during the first year after returning from Afghanistan and Iraq. Service members who returned during calendar year 2003 had the highest overall rates of hospitalization. These cohorts were deployed during the first phases of Operation Iraqi Freedom which began in March 2003. Many members of these cohorts had intense combat exposures with well documented post-deployment mental health consequences – including but not limited to post-traumatic stress disorder.[1-3] Thus, it is not surprising that these cohorts had relatively high rates of hospitalization for mental disorders. Of note, however, these cohorts also had relatively excessive numbers and high rates of hospitalizations for other categories of illnesses and injuries. The finding is consistent with that of Hoge and colleagues who recently reported that U.S. soldiers with PTSD after service in Iraq had lower general health ratings, more sick call visits, more missed workdays, more physical symptoms, and relatively high somatic symptom severity compared to their counterparts without PTSD.[4] They suggested that "the medical burden of PTSD includes physical health problems; combat veterans with serious somatic concerns should be evaluated for PTSD."[4]

In general, crude hospitalization rates (all causes) slowly increase during the year after redeploying. However, this increasing trend largely reflects increasing hospitalizations for pregnancy-related conditions. If hospitalizations related

Figure 2a-b. Rate of incident hospitalizations within one year after returning from Afghanistan/Iraq, by diagnostic category and time of redeployment between January 2002 and December 2006, active components, U.S. Armed Forces



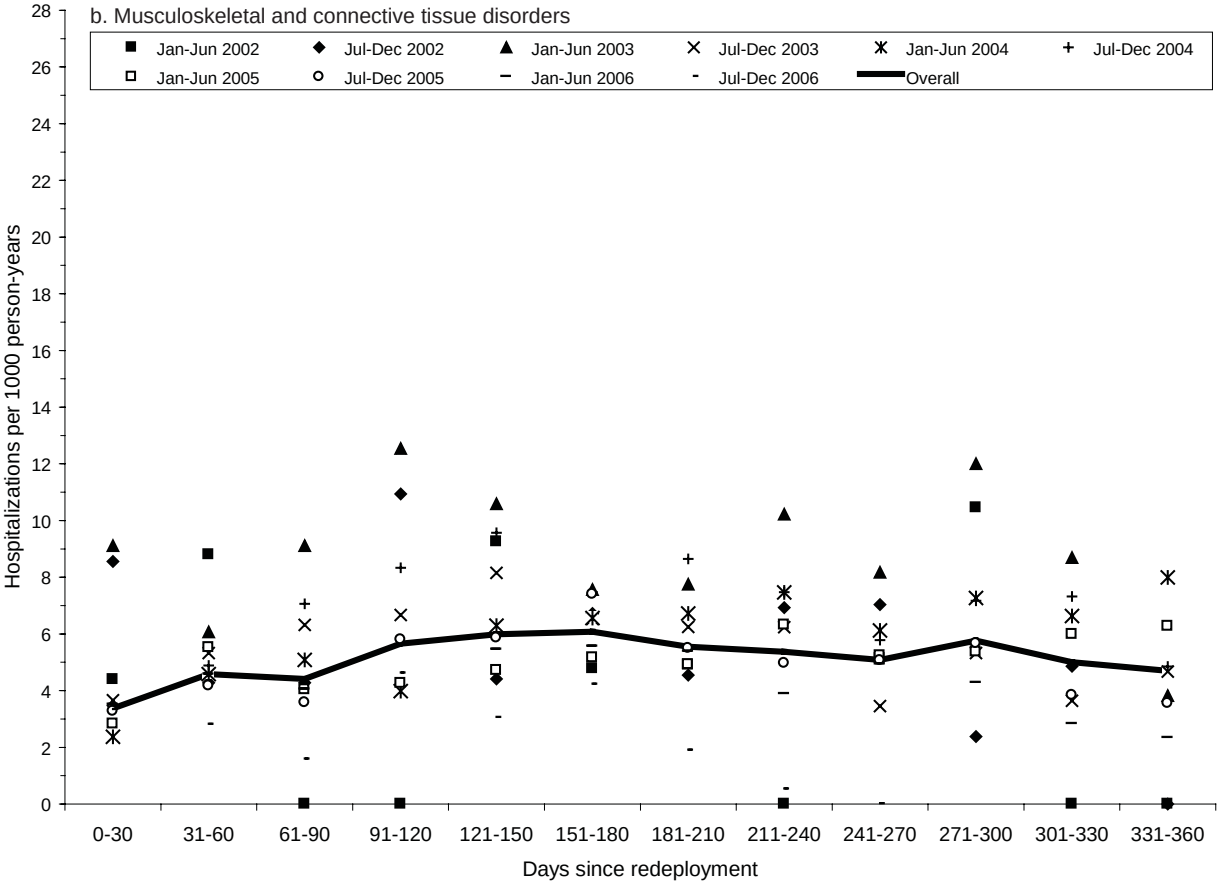
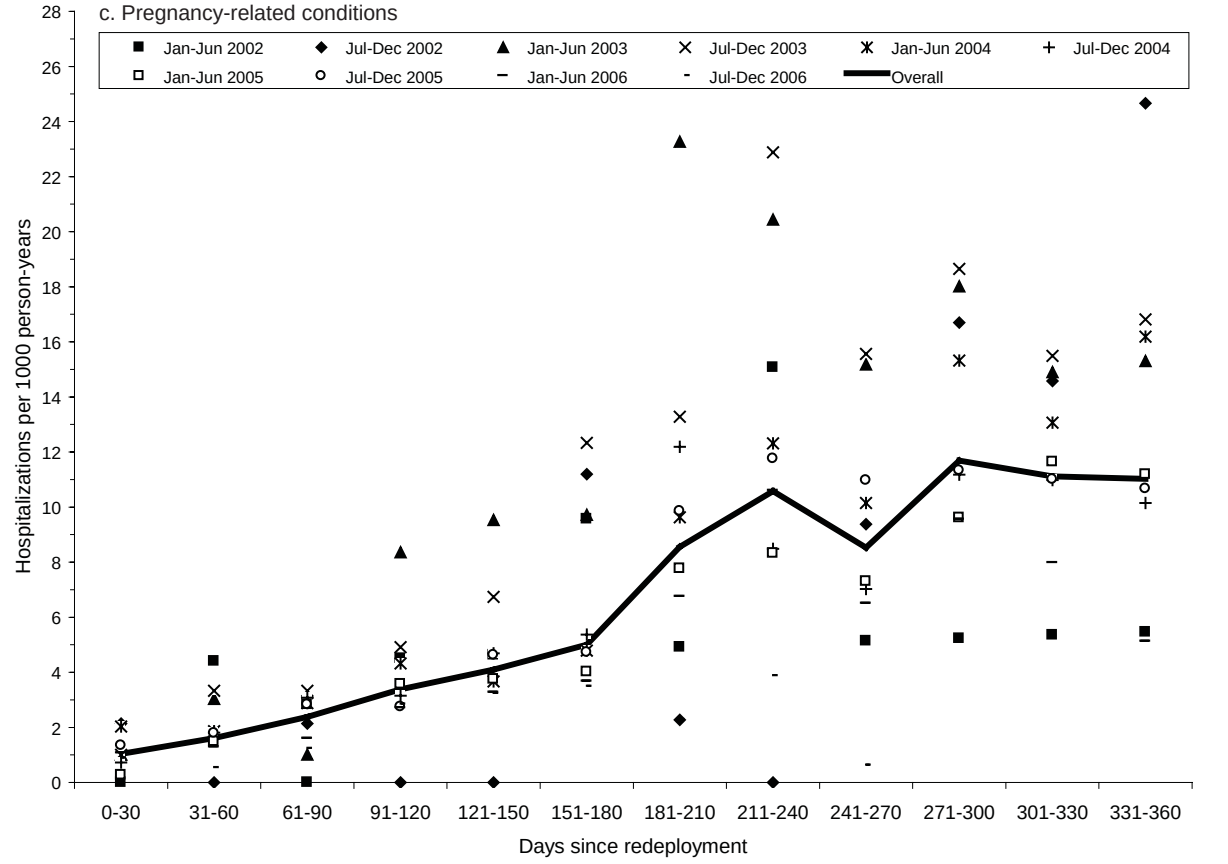


Figure 2c-d. Rate of incident hospitalizations within one year after returning from Afghanistan/Iraq, by diagnostic category and time of redeployment between January 2002 and December 2006, active components, U.S. Armed Forces



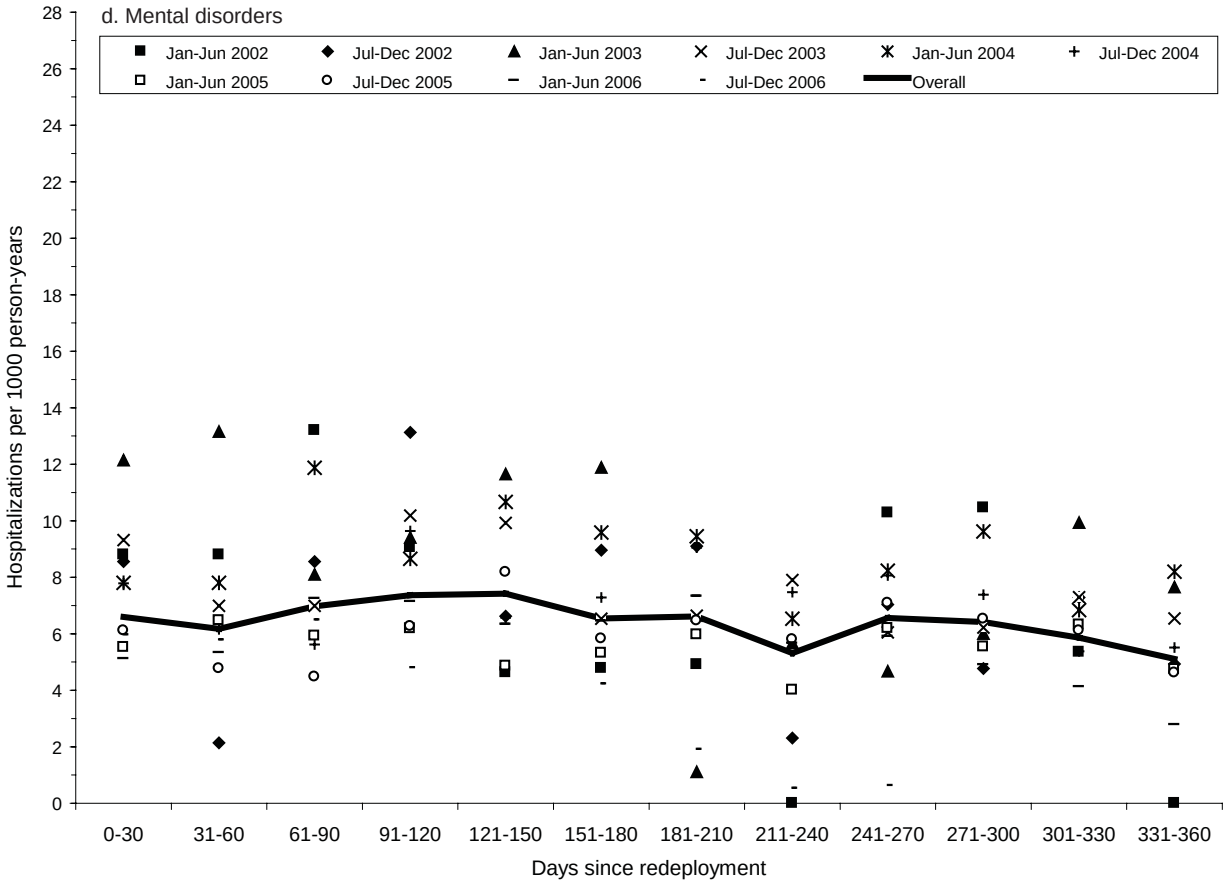


Table 2. Diagnoses (excluding pregnancy-related) during hospitalizations within one year after returning from Afghanistan/Iraq that are relatively excessive* in various cohorts of redeployers, active components, U.S. Armed Forces, January 2002-December 2006

		Observed cases	Expected cases	Ratio, observed: expected	"Excess" cases	Excess case rate†
Cohort 1: Jan-Jun 2002						
780	General symptoms	8	2.0	3.9	6.0	2.39
891	Open wound of knee, leg, ankle	5	1.2	4.3	3.8	1.54
296	Affective psychoses	8	4.3	1.9	3.7	1.48
Cohort 2: Jul-Dec 2002						
296	Affective psychoses	17	9.1	1.9	7.9	1.48
V58	Other and unspecified procedures and aftercare	6	2.4	2.5	3.6	0.68
250	Diabetes mellitus	4	1.0	4.0	3.0	0.57
Cohort 3: Jan-Jun 2003						
309	Adjustment reaction	61	31.4	1.9	29.6	2.72
780	General symptoms	20	8.7	2.3	11.3	1.03
718	Other derangement of joint	19	7.9	2.4	11.1	1.02
786	Symptoms involving respiratory/chest	23	14.1	1.6	8.9	0.81
824	Fracture of ankle	17	8.6	2.0	8.4	0.77
717	Internal derangement of knee	17	8.7	1.9	8.3	0.76
733	Other disorders of bone and cartilage	12	5.1	2.3	6.9	0.63
799	Other ill-defined & unknown causes of morbidity & mortality	7	0.3	20.3	6.7	0.61
789	Other symptoms involving abdomen, pelvis	13	6.5	2.0	6.5	0.60
722	Intervertebral disc disorders	22	15.6	1.4	6.4	0.58
296	Affective psychoses	25	18.8	1.3	6.2	0.57
592	Calculus of kidney, ureter	11	5.0	2.2	6.0	0.55
805	Fracture of vertebral column w/o mention of spinal cord injury	10	4.4	2.3	5.6	0.52
524	Dentofacial anomalies, including malocclusion	9	3.4	2.7	5.6	0.52
Cohort 4: Jul-Dec 2003						
309	Adjustment reaction	127	90.1	1.4	36.9	1.18
296	Affective psychoses	87	52.4	1.7	34.6	1.10
540	Acute appendicitis	62	42.0	1.5	20.0	0.64
823	Fracture of tibia, fibula	43	25.3	1.7	17.7	0.56
786	Symptoms involving respiratory/chest	56	40.3	1.4	15.7	0.50
Cohort 5: Jan-Jun 2004						
309	Adjustment reaction	238	187.6	1.3	50.4	0.76
786	Symptoms involving respiratory/chest	127	80.6	1.6	46.4	0.70
722	Intervertebral disc disorders	132	90.0	1.5	42.0	0.64
296	Affective psychoses	150	109.3	1.4	40.7	0.62
Cohort 6: Jul-Dec 2004						
823	Fracture of tibia, fibula	80	47.8	1.7	32.2	0.52
Cohorts 7-10: Jan 2005-Dec 2006						
	No excess hospitalizations					

*Relatively excessive diagnoses are those with ≥3 excess cases in a cohort and an excess case rate ≥0.5 per 1,000 person-years.

†Excess case rate expressed as excess cases per 1,000 person-years of follow-up within 360 days after redeployment.

Figure 3. Hospitalization rates (excluding pregnancy-related) among cohorts of redeployers, by time since returning from OEF/OIF, active components, U.S. Armed Forces, 2002-2006

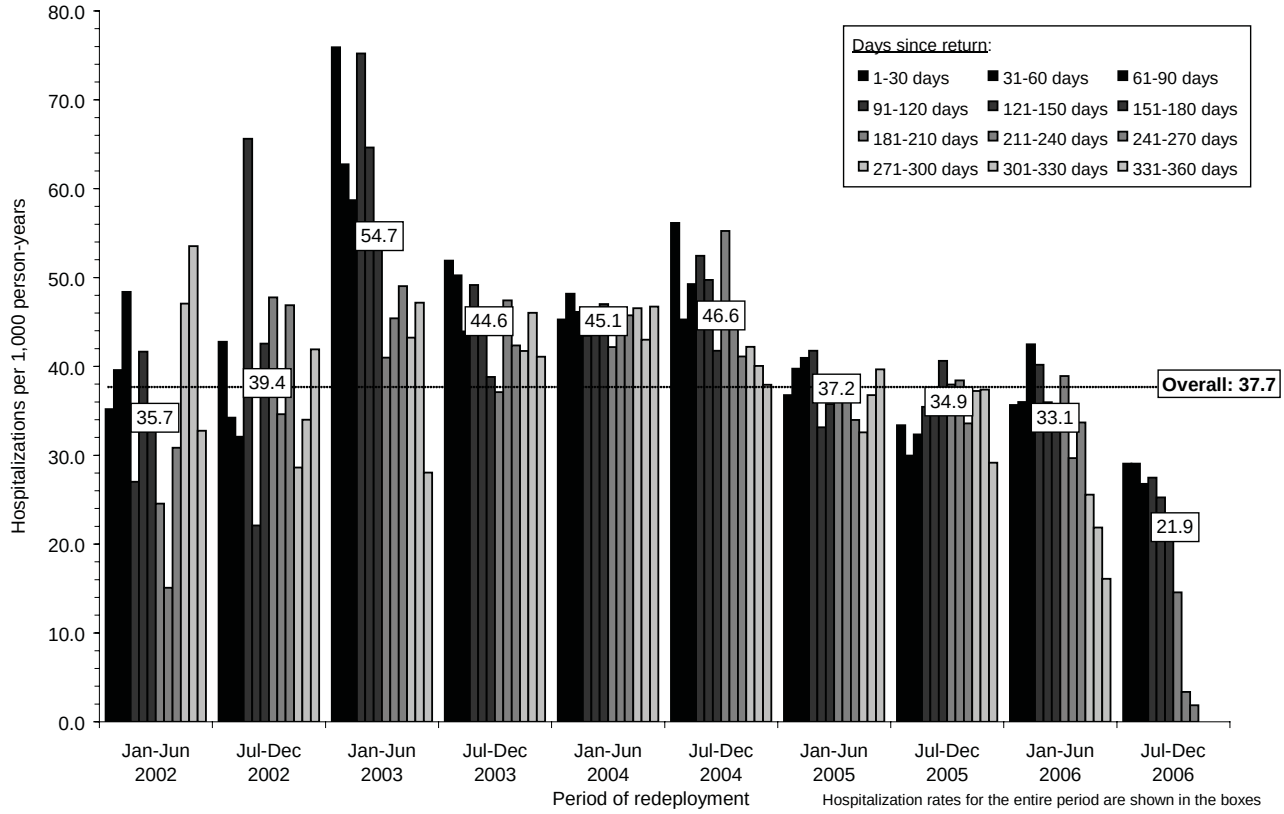
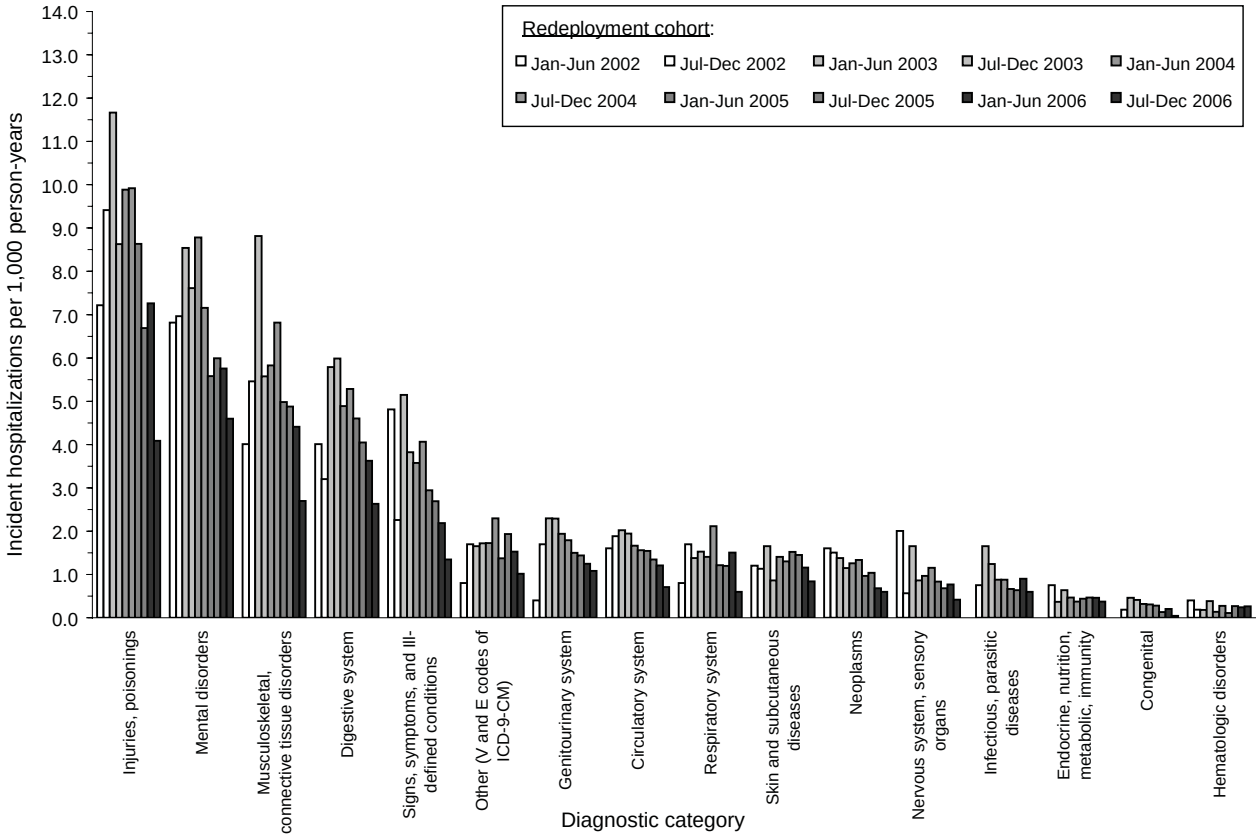


Figure 4. Rates of incident hospitalizations within one year after returning from OEF/OIF, by major diagnostic category, by time of redeployment between January 2002 and December 2006, active components, U.S. Armed Forces



to pregnancies are excluded, there are no clear or consistent temporal patterns of overall morbidity (as manifested by hospitalizations) among recent redeployers. Of note in this regard, however, in the first few months after redeploying, hospitalization rates related to injuries and poisonings tend to decline, while those related to musculoskeletal and connective tissue disorders tend to increase. To some extent, the rise in hospitalizations for musculoskeletal and connective tissue disorders after redeployment may be reflect complications, exacerbations, or treatments (e.g., surgical repairs) of deployment-related injuries. Finally, there was a small peak in hospitalizations for mental disorders in the fourth-fifth month after redeployment. The finding emphasizes the importance and relevance of the post-deployment health reassessment (DD Form 2900) at three to six months after redeployment.[5]

Finally, the results of this surveillance should be interpreted in light of several limitations. First, the cohorts of redeployers that were formed for analysis purposes were deployed at similar times. However, the lengths and locations of their deployments, and their experiences and potentially risky exposures while deployed, obviously significantly varied. The potential health effects of these differences were not accounted for in the analyses for this report. Thus, the results do not document (or suggest) that all members of various cohorts had similar deployment-related experiences, similar post-deployment morbidity experiences, or the same long-term health risks. Second, the results reflect crude (unadjusted) analyses which do not account for differences across the cohorts in demographic and other characteristics that are associated with morbidity risk (e.g., age, gender, military occupation). Cohorts of deployers to Afghanistan and Iraq are generally similar in regard to demographic and military occupational characteristics. Still, comparisons of results across cohorts should be done with awareness of potential confounding. Third, the one-year post-deployment follow-up experiences of the cohorts that redeployed most recently (e.g., in 2006) were obviously incomplete at the time of this analysis. It is possible that rates and characteristics of hospitalizations of the most recent redeployer cohorts will significantly change when the one year post-deployment follow-up experiences are completed and fully documented. However, based on the experiences of earlier cohorts of redeployers, it seems unlikely that overall findings will significantly change after complete ascertainment of all one year follow-up data.

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Outbreak of Acute Gastroenteritis Due to Norovirus, Fort Dix, New Jersey, December 2006

Historically, acute gastroenteritis has been a significant source of morbidity and operational ineffectiveness among military forces.[1,2] Caliciviruses (which include noroviruses) are the most common cause of acute gastroenteritis in the United States and account for approximately 23 million cases of acute gastroenteritis annually.[3] Noroviruses are increasingly documented as causes of acute gastroenteritis outbreaks in military forces in deployed and garrison settings.[4-8]

On 13 December 2006, the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) was informed of an outbreak of gastrointestinal illness at a field training site near Fort Dix, New Jersey. Beginning on 12 December 2006, preventive medicine personnel from Fort Monmouth, NJ, with epidemiologic support from Walter Reed Army Medical Center conducted an outbreak investigation. This report describes the findings of the investigation and countermeasures to the norovirus-associated outbreak.

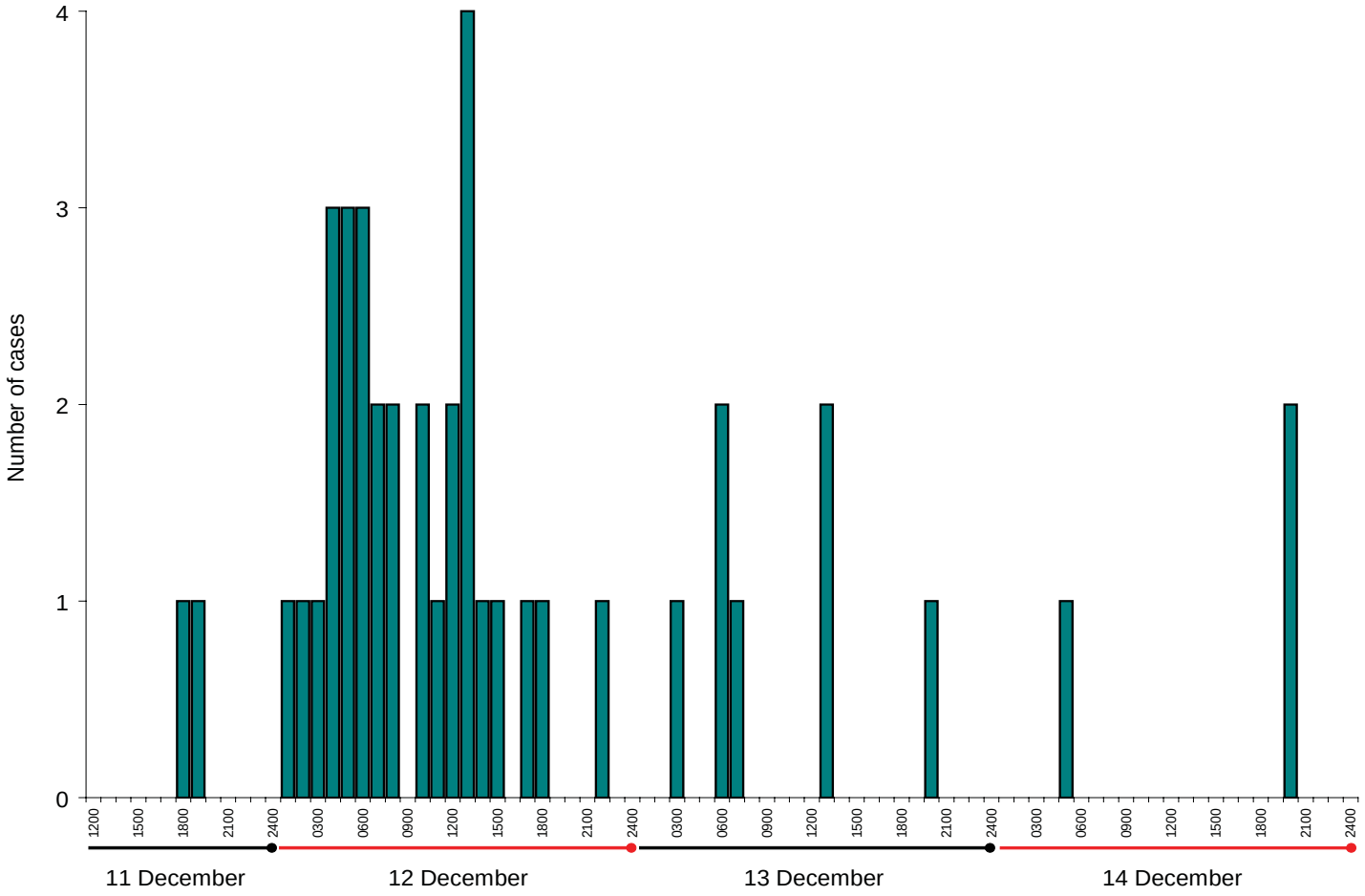
Setting:

Five battalions consisting of approximately 800 soldiers overall (>95% male) were training at a field site at Fort Dix, NJ. The living and training conditions were unremarkable for field training sites – with portable toilets, hand washing stations (that were supplied from a clean water holding area), and hand sanitizer stations near toilets and the dining facility.

Contract food handlers served two hot meals per day from portable insulated food containers. Desserts and green salads were prepackaged in individual and large serving sizes, respectively. Soldiers could purchase food from commercial establishments during visits to garrison and from a mobile vendor that visited training sites.

Potable water was provided from four 400-gallon water trailers (stored in a heated tent) and from bottles that were commercially available. At outlying ranges, water

Figure 1. Times (date and hour) of onset of symptoms of acute gastroenteritis, U.S. Army soldiers, Fort Dix, New Jersey, 11-14 December 2006



was available from 400-gallon water trailers and 5-gallon coolers. Contractors were responsible for delivering water to the trailers and maintaining the portable toilets and hand washing facilities.

Activities:

For investigation purposes, a possible case was defined as a soldier who presented to the troop medical clinic with at least one of the following symptoms: nausea, vomiting, diarrhea. Health care providers at the clinic notified the investigation team of soldiers who were possible cases. Forty-five soldiers who were possible cases completed a questionnaire that was developed for the investigation. Questionnaire data were analyzed by epidemiologists at the USACHPPM.

During the investigation, the team reviewed case histories with healthcare providers at the medical treatment facility at Fort Dix. They also reviewed electronic medical records and syndromic surveillance system reports (ESSENCE) to identify relevant laboratory and other clinical information and to assess the geographic extent of the outbreak.[9] Epidemiologists from Burlington County, New Jersey, and the State Department of Health and Senior Services were consulted regarding outbreaks of gastrointestinal illnesses in communities surrounding Fort Dix.

During the outbreak, all ill soldiers were evacuated from the training site to a barracks that was used as a temporary isolation facility. The investigation team interviewed and collected stool samples from soldiers who were recuperating in the isolation facility. Stool specimens were tested for norovirus by Public Health Laboratory Services, New Jersey Department of Health and Senior Services, using a polymerase chain reaction (PCR) assay.

The investigation team inspected two kitchens at the dining facility that served the affected soldiers, interviewed food service personnel and managers regarding the health statuses of food handlers, observed a dinner meal, and reviewed menus for the 3 days prior to the onset of the outbreak. The team also inspected hand hygiene stations (hand washing and alcohol hand sanitizer) and water trailers at field locations and sent water samples for laboratory testing.

Results:

The index cases developed symptoms the evening of 11 December; however, most cases became symptomatic during the morning or afternoon of 12 December **(Figure 1).** The attack rate among soldiers who were training at the field site was estimated as 5-6%.

The predominant symptoms among possible cases were nausea (95%), vomiting (84%), diarrhea (73%). Abdominal cramps, headache, chills, body aches, and fatigue were also reported **(Table 1).** Bloody diarrhea was reported by one patient. Twenty percent of possible cases were febrile. Four of five stool specimens from possible cases were confirmed positive for norovirus.

Figure 1. Times (hour and day) of onset of symptoms of acute gastroenteritis, U.S. Army soldiers, Fort Dix, New Jersey, 11-14 December 2006

	Number	% of total
Nausea	43	95.6
Vomiting	38	84.4
Fatigue	36	80.0
Headache	35	77.8
Diarrhea	33	73.3
Abdominal cramps	33	73.3
Chills	32	71.1
Body ache	32	71.1
Fever	9	20.0
Constipation	2	4.4
Bloody diarrhea	1	2.2
Other	1	2.2

Dining facility managers reported no ill food handlers prior to the outbreak. No food handling or processing deficiencies were noted during the investigation. Some soldiers had visibly dirty hands when eating meals. A few soldiers reported skipping hand washing because the water was too cold; some others used hand sanitizer in lieu of the hand washing station.

Health officials from the county nearest to Fort Dix reported large outbreaks of gastrointestinal infections (with person-to-person transmission patterns) in the past year. A school in an adjacent county temporarily closed after 50 and 200 absences on 5 and 6 December, respectively. Similar outbreaks had recently occurred at long-term care facilities. Norovirus was suspected as the causative agent in these outbreaks, but no samples were collected for laboratory testing.

Countermeasures:

Based on its findings, the investigation team made recommendations regarding leader education, the interruption of infection transmission, and follow-up. Unit leaders were briefed regarding the nature of transmission of viral acute gastroenteritis, the importance of providing and maintaining adequate hand hygiene facilities and toilets at all times, and the importance of frequent and thorough hand hygiene by all soldiers. To interrupt infection transmission, the first cases were sequestered in a tent at the field site and instructed to use a dedicated portable toilet facility. As the number of ill soldiers increased, a barracks isolation facility was established in the Fort Dix garrison area. Finally, dining facility managers were instructed to promptly report all

illnesses of food handlers and to prohibit ill food handlers from working.

Soldiers in the affected unit were dismissed for Christmas holiday. No recurrences of acute gastroenteritis were observed after they returned.

Editorial Comment:

This report documents a self-limited outbreak of acute gastroenteritis among soldiers at a field training site, most likely due to norovirus. The infection source was not identified; however, several interactions were documented between the relatively closed military unit and the surrounding community which had experienced recent norovirus-associated outbreaks. Thus, it seems likely that the virus was introduced into the military setting as a point source by an unknown means and secondary transmission from person-to-person was enabled by inadequate hand-washing practices.

Norovirus is a frequent cause of sporadic and clustered cases of acute gastroenteritis in military and civilian settings, including schools, military training centers, hotels, barracks, camps, war ships, and cruise ships.[3-8] In healthy adults, the disease is temporarily debilitating – with nausea, vomiting, and diarrhea – but self-limited. Because the virus is transmissible in small concentrations from person-to-person, in food and water, and on environmental surfaces, it is notoriously difficult to terminate outbreaks and prevent recurrences. In this case, the magnitude, duration, and extent of the outbreak were likely limited by the rapid recognition of the outbreak and the immediate isolation of cases.

Report and comment provided by Kylee Plummer, MAJ, AN, US Army, Fort Monmouth, NJ with acknowledgements to COL Michael K. Bayles, AN; LTC Hee-Choon S. Lee, MC; SSG Dwayne Curtis; SSG Gladys Fralvcelli-Torres, US Army; John F. Ambrose, MPH, Center for Healthcare Educational Studies; Joan Vetler, RN, BSN; and Khalid Chaudry.

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Heat-related Injuries, U.S. Armed Forces, 2006

Throughout history, heat-related injuries have been significant threats to the health and operational effectiveness of military members.[1] Decades of operational lessons learned and numerous research studies have resulted in doctrine, equipment, and training methods that significantly reduce the adverse effects of heat on U.S. military activities.[2] Still, physical exertion in hot environments causes hundreds of (occasionally fatal) injuries among U.S. service members. This report summarizes hospitalizations, outpatient visits, and reportable events related to heat injuries among active components of the U.S. Armed Services from January through December 2006.

Methods:

The DMSS was searched to identify all medical encounters and notifiable medical event reports that included a diagnosis of "other and unspecified effects of heat and light" (ICD-9-CM: 992.0-992.9). If more than one source documented a heat injury episode, information for summary purposes was derived from the hospitalization record (if available) or the reportable event record; ambulatory records were used when they were the only sources of information regarding particular episodes. Finally, this summary includes only incident cases, defined as one heat injury per service member per six months.

Results:

In 2006, there were 286 incident cases of heat stroke and 1,854 incident cases of heat exhaustion among active service members. Overall crude incidence rates of heat stroke and heat exhaustion were 0.21 and 1.36 per 1,000 person-years (p-yrs), respectively **(Table 1)**.

The overall rate (unadjusted) of heat stroke in 2006 was lower than any of the annual rates from 2002-2005 **(Figure 1)**. While the overall rate (unadjusted) of heat exhaustion in 2006 was the highest of the 5-year surveillance period, there were fewer hospitalized cases of heat exhaustion in 2006 than in any other year of the period **(Figure 2)**.

Rates of heat stroke and heat exhaustion declined with increasing age and were higher in combat-related compared to other occupational groups **(Table 1)**. Of interest, the heat stroke rate was more than 50% higher among males than females, while the heat exhaustion rate was higher among females than males **(Table 1)**.

The Marine Corps had the highest rate of heat injuries, followed by the Army **(Table 1, Figure 3)**. Among Marines, incidence rates of heat stroke and heat exhaustion were approximately 19% and 52% higher than Army rates, respectively **(Table 1)**. Relative to the Army and Marine Corps, the Air Force and Navy had much lower heat injury rates **(Figure 3)**. The Air Force and Navy had similar rates of heat stroke, however, airmen had higher rates of heat exhaustion than sailors **(Table 1)**.

Table 1. Incident cases and rates of heat stroke and heat exhaustion, active components, U.S. Armed Forces 2006

	Heat Stroke ICD-9-CM: 992.0		Heat exhaustion ICD-9-CM: 992.3-5	
	Cases	Incidence rate*	Cases	Incidence rate*
Total	286	0.21	1854	1.36
Sex				
Male	259	0.22	1559	1.34
Female	27	0.14	295	1.49
Age group				
<20	62	0.64	421	4.35
20-24	135	0.29	831	1.78
25-29	49	0.16	308	1.03
30-34	20	0.10	147	0.76
35-39	13	0.08	83	0.50
>=40	7	0.05	64	0.46
Race				
White	195	0.23	1295	1.50
Black	56	0.24	322	1.36
Other	35	0.15	237	1.00
Service				
Army	179	0.36	932	1.89
Navy	18	0.05	172	0.50
Air Force	12	0.03	239	0.69
Marine Corps	77	0.43	511	2.87
Military status				
Enlisted	255	0.22	1725	1.52
Officer	31	0.14	129	0.58
Mil occupation				
Combat	111	0.37	554	1.83
Healthcare	15	0.13	116	1.04
Other	160	0.17	1184	1.25

*per 1,000 person-years

Editorial Comment:

In the past 5 years, there has been no clear trend in heat stroke incidence among service members, although in the past 4 years, there have been moderate increases in reports of heat exhaustion. Of note, the increase in heat exhaustion cases overall has not included an increase in hospitalized cases. In fact, in 2006, there were fewer hospitalizations for heat exhaustion than in any of the preceding 5 years.

The findings regarding heat exhaustion suggest that heat injuries may be evacuated from field settings to fixed

Figure 1. Number and rate of heat stroke diagnoses, by source of report and year of diagnosis, active components, U.S. Armed Forces, 2002-2006

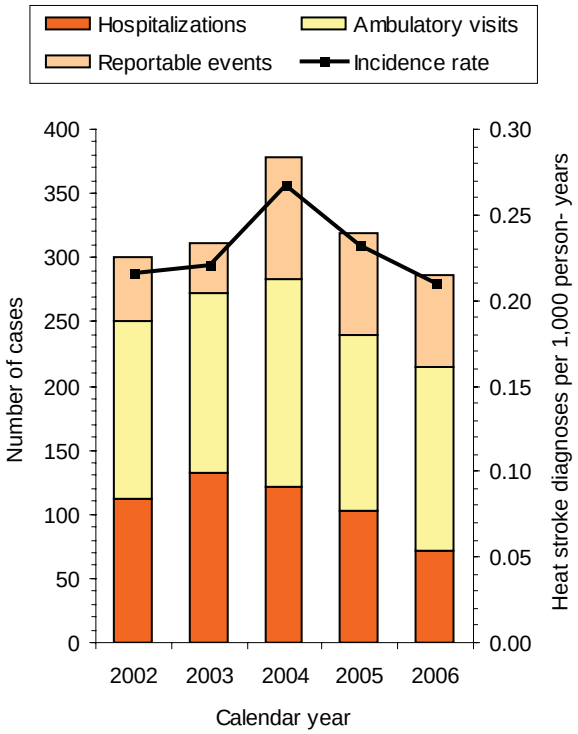


Figure 2. Number and rate of heat exhaustion diagnoses, by source of report and year of diagnosis, active components, U.S. Armed Forces, 2002-2006

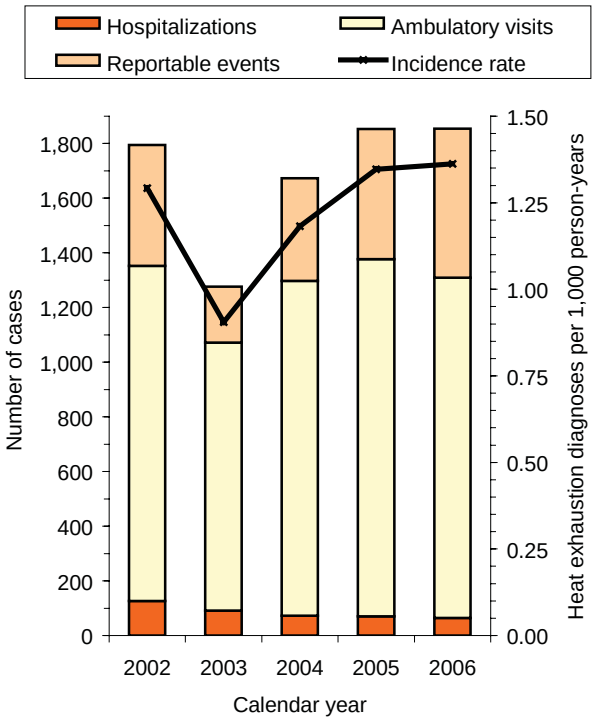
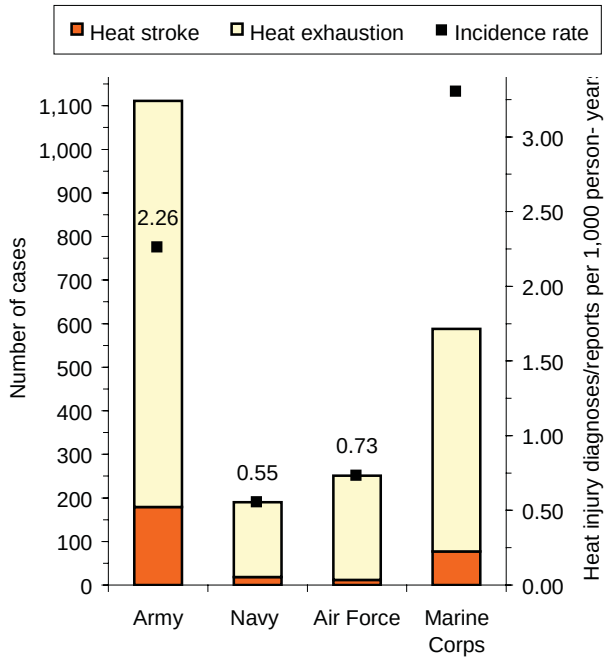


Figure 3. Number and rate of heat injuries, by service, active components, U.S. Armed Forces, 2006



medical facilities more often and/or earlier in their clinical courses; that ascertainment and reporting of heat exhaustion cases may be improving; and/or that the incidence of heat exhaustion – not serious enough to require hospitalization – is increasing.

Whatever the reasons for the recent increase in heat exhaustion reports, it remains clear that military activities in hot and humid environments are significant threats to the health and operational effectiveness of service members. Among all service members, the youngest and most inexperienced remain at highest risk. Small unit leaders, training cadre, and supporting medical personnel, particularly at initial entry training centers, must ensure that service members whom they supervise and support are informed regarding risks, preventive countermeasures (e.g., water consumption), early signs and symptoms, and first responder actions related to heat injuries.[2] Leaders should also be aware of the upper limits of water intake, designed to prevent rare but life-threatening events of overhydration/hyponatremia.[3]

Information related to heat injury prevention and treatment are available at: http://chppm-www.apgea.army.mil/heat/#PM.

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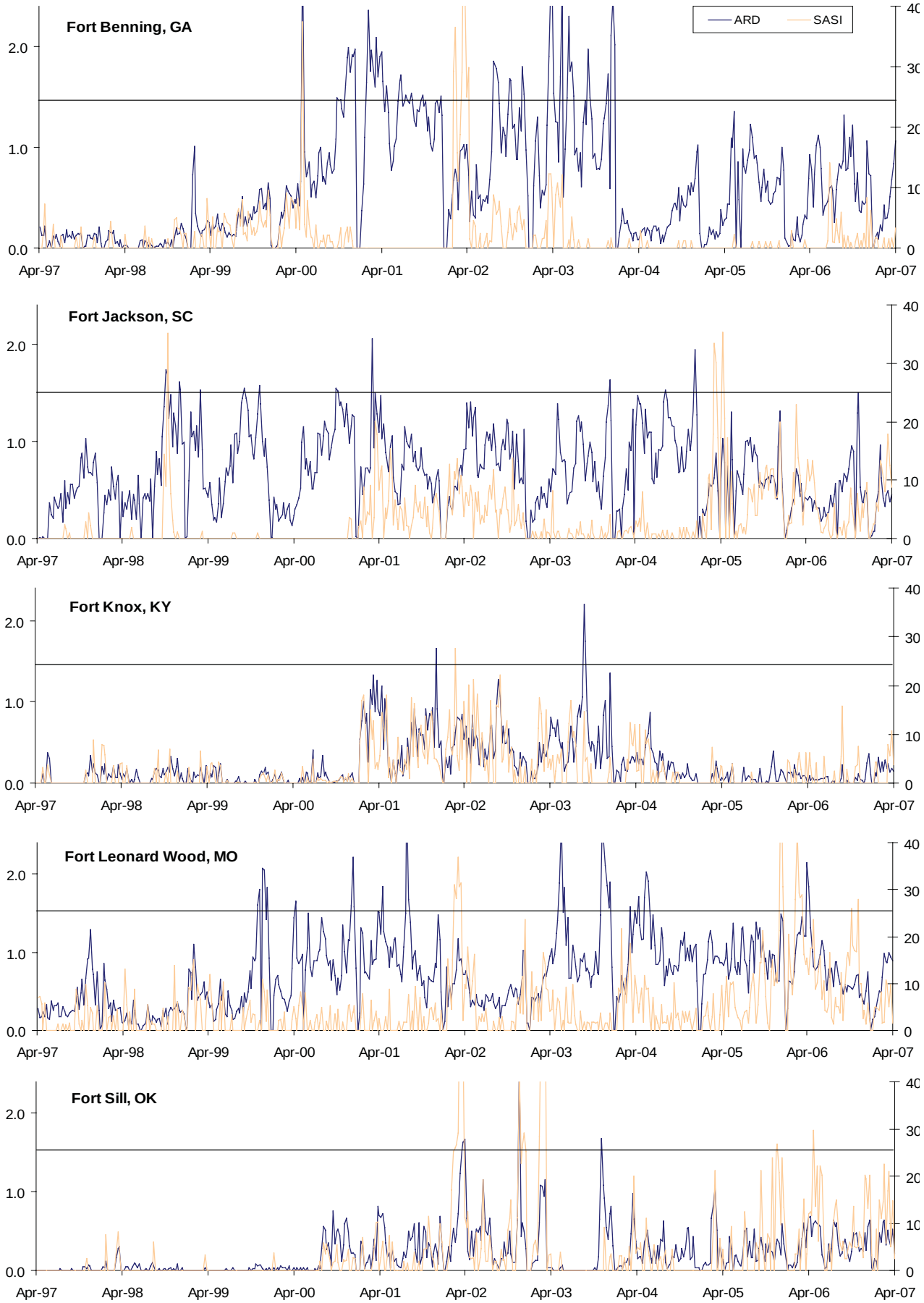
Acute Respiratory Disease, basic training centers, U.S. Army, 1997-2007



Sentinel reportable events for service members and beneficiaries at U.S. Air Force medical facilities, cumulative numbers* for calendar years through April 2006 and 2007

Air Force

Reporting location	Number of reports all events‡		Food-borne								Vaccine Preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
ACC Combat	414	387	1	1	.	1	1	.	.	.	.	.	1	3	2	1
AETC Education	224	158	.	.	1	.	1	2	.	.	.	.	1	.	3	.
Lackland, TX	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USAF Academy, CO	46	16	.	.	.	.	.	2	.	.	.	.	.	.	.	.
AFDW	22	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
AFMC Materiel	213	133	1	.	.	.	2	3	.	.	.	.	2	.	2	1
AFSOC Special Ops	42	34	.	.	.	.	2	.	.	1	.	.	.	.	.	.
AFSPC Space	132	82	.	1	.	1	1	3	.	.	.	.	1	1	.	1
AMC Mobility	355	164	.	.	2	.	5	.	6	1	.	.	3	1	1	1
PACAF	218	138	.	.	1	.	5	1	.	.	.	.	2	2	.	7
PACAF Korea	100	36	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USAFE	161	100	.	2	1	.	.	.	.	.	.	.	.	.	1	.
Total	**1,927**	**1,252**	**2**	**4**	**5**	**2**	**17**	**11**	**6**	**2**	**0**	**0**	**10**	**7**	**9**	**11**

*Events reported by May 7, 2006 and 2007

†Seventy medical events/conditions specified by Tri-Service Reportable Events, May 2004.

Note: Completeness and timeliness of reporting vary by facility. Only facilities that have reported events in 2006 or 2007 are listed.

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental			
	Lyme disease		Malaria		Chlamydia		Gonorrhea		Syphilis‡		Urethritis§		Cold		Heat	
	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
ACC Combat	.	2	.	.	372	180	17	9	3	.	.	.	3	.	.	.
AETC Education	.	.	1	.	160	129	25	12	1	.	.	.	.	.	.	.
Lackland, TX	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USAF Academy, CO	.	.	1	.	28	14	.	.	.	.	.	.	2	.	.	.
AFDW	.	.	.	.	15	4	1	.	.	.	.	.	.	.	.	.
AFMC Materiel	.	.	1	.	133	104	19	15	1	.	.	.	.	.	.	.
AFSOC Special Ops	.	.	.	.	28	30	10	3	.	.	.	.	.	.	.	.
AFSPC Space	1	.	.	.	96	66	5	6	.	.	.	.	1	.	.	.
AMC Mobility	2	2	1	.	256	135	13	9	1	.	.	.	.	.	.	1
PACAF	.	.	1	.	185	106	11	3	.	.	.	.	2	.	.	.
PACAF Korea	.	.	.	.	80	28	12	.	.	.	.	.	.	.	.	.
USAFE	.	1	1	.	96	61	13	9	1	.	.	.	.	.	.	.
Total	**3**	**5**	**6**	**0**	**1,449**	**857**	**126**	**66**	**7**	**0**	**0**	**0**	**8**	**0**	**0**	**1**

‡Primary and secondary.

§Urethritis, non-gonococcal (NGU).

Note: Completeness and timeliness of reporting vary by facility. Only facilities that have reported events in 2006 or 2007 are listed.

Sentinel reportable events for service members and beneficiaries at U.S. Army medical facilities, cumulative numbers* for calendar years through April 2006 and 2007

Army

Reporting location	Number of reports all events‡		Food-borne								Vaccine Preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
NORTH ATLANTIC																
Washington, DC Area	104	79	.	.	.	3	1	.	.	.	.	.	.	2	.	1
Aberdeen, MD	0	19	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Belvoir, VA	137	71	3	2	.	.	3	.	1	.	.	.	.	.	.	.
FT Bragg, NC	530	419	5	1	.	.	5	4	.	.	.	.	.	.	.	.
FT Drum, NY	40	96	.	.	.	.	.	.	.	.	.	.	.	2	.	.
FT Eustis, VA	75	68	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Knox, KY	81	100	.	.	.	.	.	1	.	.	.	.	.	1	.	.
FT Lee, VA	159	161	.	.	.	.	.	.	.	.	.	.	.	2	.	.
FT Meade, MD	41	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.
West Point, NY	15	10	.	.	.	.	1	.	.	.	.	.	.	3	.	.
GREAT PLAINS																
FT Sam Houston, TX	121	119	.	.	.	.	.	.	.	.	.	.	1	2	.	.
FT Bliss, TX	246	260	.	.	2	.	1	2	1	.	.	.	.	1	.	4
FT Carson, CO	272	279	.	.	.	2	3	.	.	.	.	.	.	.	.	.
FT Hood, TX	589	546	.	2	.	1	2	1	.	3	.	.	.	.	.	.
FT Huachuca, AZ	17	45	.	.	.	.	.	5	.	.	.	.	.	.	.	.
FT Leavenworth, KS	12	13	.	1	.	.	.	.	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	110	144	.	.	1	.	1	.	.	.	.	.	.	.	4	2
FT Polk, LA	78	66	2	.	.	3	.	2	.	.	.	.	.	.	.	1
FT Riley, KS	43	111	1	.	.	.	.	2	.	.	.	.	.	.	.	.
FT Sill, OK	88	72	.	.	.	.	1	1	.	.	.	.	.	.	1	1
SOUTHEAST																
FT Gordon, GA	168	269	.	.	.	.	.	.	.	.	.	.	9	.	.	.
FT Benning, GA	124	91	2	.	1	1	2	.	.	.	.	.	.	1	.	1
FT Campbell, KY	256	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Jackson, SC	83	64	.	.	.	.	.	.	.	.	.	.	.	1	.	.
FT Rucker, AL	20	15	1	.	.	.	.	.	.	1	.	.	.	.	.	.
FT Stewart, GA	218	367	.	1	.	.	.	3	2	9	.	.	2	1	2	1
WESTERN																
FT Lewis, WA	232	195	.	1	.	1	.	.	.	1	.	.	.	.	1	1
FT Irwin, CA	25	20	.	1	.	.	.	1	.	.	.	.	.	.	.	.
FT Wainwright, AK	61	118	.	1	.	.	1	.	.	1	.	.	.	.	.	.
OTHER LOCATIONS																
FT Shafter, HI	327	256	8	6	.	.	6	5	1	.	.	.	.	1	.	.
Germany	309	199	5	3	.	1	4	2	.	.	.	.	1	.	1	1
Korea	171	177	.	.	.	.	.	.	.	.	.	.	1	.	1	2
Total	**4,752**	**4,462**	**27**	**19**	**4**	**12**	**31**	**29**	**5**	**15**	**0**	**0**	**14**	**17**	**10**	**15**

*Events reported by May 7, 2006 and 2007

†Seventy medical events/conditions specified by Tri-Service Reportable Events, May 2004.

Note: Completeness and timeliness of reporting vary by facility. Only facilities that have reported events in 2006 or 2007 are listed.

Sentinel reportable events for service members and beneficiaries at U.S. Army medical facilities, cumulative numbers* for calendar years through April 2006 and 2007

Army

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental			
	Lyme disease		Malaria		Chlamydia		Gonorrhea		Syphilis‡		Urethritis§		Cold		Heat	
	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
NORTH ATLANTIC																
Washington, DC Area	.	1	1	.	50	39	8	3	1	2	.	.	.	.	.	.
Aberdeen, MD	.	.	.	.	.	11	.	3	.	.	.	.	.	.	.	.
FT Belvoir, VA	.	.	.	.	52	45	12	7	.	2	.	.	.	.	.	.
FT Bragg, NC	.	.	2	1	388	310	51	52	3	.	56	41	1	1	13	5
FT Drum, NY	.	.	.	.	33	52	7	11	.	.	.	.	.	.	.	.
FT Eustis, VA	.	.	.	.	50	57	17	2	.	.	.	.	.	.	.	1
FT Knox, KY	2	.	.	.	59	84	13	11	.	.	.	.	3	.	.	.
FT Lee, VA	.	.	.	.	112	124	21	21	.	.	.	.	.	1	.	.
FT Meade, MD	.	.	.	.	35	9	6	3	.	.	.	.	.	1	.	.
West Point, NY	.	2	.	.	9	5	.	.	.	.	.	.	.	.	.	.
GREAT PLAINS																
FT Sam Houston, TX	.	.	.	.	92	90	22	20	.	1	.	.	.	.	.	.
FT Bliss, TX	.	.	1	.	116	120	20	14	2	2	.	.	.	.	.	.
FT Carson, CO	.	.	.	.	153	158	32	28	.	1	10	5	.	1	.	.
FT Hood, TX	.	.	.	.	339	389	92	56	.	1	5	31	.	.	2	.
FT Huachuca, AZ	.	.	.	.	14	36	2	4	.	.	.	.	1	.	.	.
FT Leavenworth, KS	.	.	.	.	10	11	2	1	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	.	.	.	.	68	90	7	17	.	1	.	.	.	2	.	.
FT Polk, LA	.	.	.	10	57	40	19	8	.	1	.	.	.	.	.	.
FT Riley, KS	.	.	.	.	37	75	5	3	.	.	.	.	.	.	.	.
FT Sill, OK	.	.	.	.	20	53	9	11	2	.	.	.	.	1	.	.
SOUTHEAST																
FT Gordon, GA	.	.	.	.	108	181	22	28	.	1	.	.	.	.	.	.
FT Benning, GA	.	.	.	1	92	49	22	23	.	.	.	.	.	.	1	.
FT Campbell, KY	.	.	.	.	171	.	23	.	.	.	.	.	.	.	.	.
FT Jackson, SC	.	.	.	.	75	52	8	9	.	2	.	.	.	.	.	.
FT Rucker, AL	.	.	.	.	18	13	1	1	.	.	.	.	.	.	.	.
FT Stewart, GA	.	.	.	.	146	260	48	53	1	1	7	.	1	.	.	1
WESTERN																
FT Lewis, WA	.	.	1	1	175	163	31	17	.	.	18	5	.	.	.	.
FT Irwin, CA	.	.	.	.	23	17	2	1	.	.	.	.	.	.	.	.
FT Wainwright, AK	.	.	1	.	34	63	4	5	.	.	.	.	15	22	.	.
OTHER LOCATIONS																
FT Shafter, HI	.	.	.	.	241	193	43	21	.	.	.	.	.	.	2	2
Germany	4	5	1	2	197	119	71	40	.	.	.	1	.	.	.	1
Korea	.	.	.	.	126	142	35	12	1	.	.	1	2	20	.	.
Total	**6**	**8**	**7**	**15**	**3,100**	**3,050**	**655**	**485**	**10**	**15**	**96**	**84**	**23**	**49**	**18**	**10**

‡Primary and secondary.

§Urethritis, non-gonococcal (NGU).

Note: Completeness and timeliness of reporting vary by facility. Only facilities that have reported events in 2006 or 2007 are listed.

Sentinel reportable events for service members and beneficiaries at U.S. Navy medical facilities, cumulative numbers* for calendar years through April 2006 and 2007

Navy

Reporting location	Number of reports all events‡		Food-borne								Vaccine Preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
NATIONAL CAPITOL AREA																
Annapolis, MD	16	0	.	.	1	.	.	.	.	.	.	.	.	.	.	.
Bethesda, MD	28	12	2	.	.	.	1	.	.	.	.	.	.	.	.	.
Patuxent River, MD	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NAVY MEDICINE EAST																
Albany, GA	4	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Atlanta, GA	5	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Beaufort, SC	67	71	.	.	.	.	1	.	.	1	.	.	.	.	.	.
Camp Lejeune, NC	187	54	.	.	.	.	1	.	.	.	.	.	.	.	.	.
Cherry Point, NC	42	31	.	.	1	.	2	.	.	.	.	.	.	.	.	.
Great Lakes, IL	0	61	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Jacksonville, FL	65	42	.	1	.	.	4	1	.	1	.	.	.	.	.	.
Kings Bay, GA	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mayport, FL	12	23	.	1	.	.	.	4	.	.	.	.	.	.	.	.
NABLC Norfolk, VA	10	8	.	.	.	.	1	.	.	.	.	.	.	.	.	.
NBMC Norfolk, VA	70	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NEHC Norfolk, VA	0	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
North Charleston, SC	0	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pensacola, FL	23	28	.	.	.	.	.	.	.	1	.	.	.	.	.	3
Portsmouth, VA	1	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Washington, DC	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Guantanamo Bay, Cuba	0	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Europe	2	9	1	.	.	.	.	.	.	.	.	.	.	.	.	.
NAVY MEDICINE WEST																
Camp Pendleton, CA	23	0	.	.	.	.	.	.	.	.	.	.	1	.	.	.
Corpus Christi, TX	1	2	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Fallon, NV	3	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ingleside, TX	1	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lemoore, CA	57	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pearl Harbor, HI	3	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
San Diego, CA	31	204	.	1	1	2	2	2	1	2	.	.	1	26	.	.
Guam	26	15	.	.	.	.	1	.	.	.	.	.	.	.	.	.
Japan	60	16	.	.	.	.	2	.	.	.	.	.	.	.	.	1
NAVAL SHIPS																
COMNAVAIRLANT/CINCLANTFLEET	52	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.
COMNAVSURFPAC/CINCPACFLEET	15	14	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total	**804**	**605**	**3**	**3**	**3**	**2**	**15**	**7**	**1**	**5**	**0**	**0**	**2**	**26**	**0**	**4**

*Events reported by May 7, 2006 and 2007

†Seventy medical events/conditions specified by Tri-Service Reportable Events, May 2004.

Note: Completeness and timeliness of reporting vary by facility. Only facilities that have reported events in 2006 or 2007 are listed.

Sentinel reportable events for service members and beneficiaries at U.S. Navy medical facilities, cumulative numbers* for calendar years through April 2006 and 2007

Navy

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental			
	Lyme disease		Malaria		Chlamydia		Gonorrhea		Syphilis‡		Urethritis§		Cold		Heat	
	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
NATIONAL CAPITOL AREA																
Annapolis, MD	.	.	.	.	13	.	2	.	.	.	.	.	.	.	.	.
Bethesda, MD	.	.	.	.	8	9	2	.	.	.	.	.	.	.	.	.
Patuxent River, MD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NAVY MEDICINE EAST																
Albany, GA	.	.	.	.	4	.	.	.	.	.	.	.	.	.	.	.
Atlanta, GA	.	.	.	.	3	1	2	1	.	1	.	.	.	.	.	.
Beaufort, SC	.	.	.	.	33	59	.	4	.	1	.	.	.	.	33	.
Camp Lejeune, NC	1	.	.	.	147	47	30	5	.	.	.	.	.	.	6	2
Cherry Point, NC	.	.	.	.	35	26	4	4	.	1	.	.	.	.	.	.
Great Lakes, IL	.	.	.	.	.	49	.	10	.	.	.	.	.	.	.	.
Jacksonville, FL	.	.	.	.	23	29	2	7	2	1	.	.	.	.	.	.
Kings Bay, GA	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mayport, FL	.	.	.	.	12	15	.	.	.	1	.	.	.	.	.	.
NABLC Norfolk, VA	.	.	.	.	7	7	2	1	.	.	.	.	.	.	.	.
NBMC Norfolk, VA	.	.	.	.	52	2	14	.	1	.	.	.	.	.	.	.
NEHC Norfolk, VA	.	.	.	.	.	2	.	.	.	.	.	.	.	.	.	.
North Charleston, SC	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.
Pensacola, FL	.	.	.	.	22	17	1	2	.	.	.	.	.	.	.	2
Portsmouth, VA	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
Washington, DC	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Guantanamo Bay, Cuba	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.
Europe	.	.	1	.	.	9	.	.	.	.	.	.	.	.	.	.
NAVY MEDICINE WEST																
Camp Pendleton, CA	.	.	.	.	22	.	.	.	.	.	.	.	.	.	.	.
Corpus Christi, TX	.	.	.	.	1	1	.	1	.	.	.	.	.	.	.	.
Fallon, NV	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.
Ingleside, TX	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
Lemoore, CA	.	.	.	.	19	.	4	.	.	.	.	.	.	.	.	.
Pearl Harbor, HI	.	.	.	.	1	.	1	.	.	.	.	.	.	.	.	.
San Diego, CA	.	1	.	.	19	118	4	16	.	3	.	.	.	.	.	.
Guam	.	.	.	.	20	13	5	2	.	.	.	.	.	.	.	.
Japan	.	.	.	.	52	12	6	3	.	.	.	.	.	.	.	.
NAVAL SHIPS																
COMNAVAIRLANT/CINCLANTFLEET	.	.	.	.	44	4	8	.	.	.	.	.	.	.	.	.
COMNAVSURFPAC/CINCPACFLEET	.	.	.	.	6	9	6	5	.	.	3	.	.	.	.	.
Total	**1**	**1**	**1**	**0**	**548**	**433**	**93**	**61**	**3**	**8**	**3**	**0**	**0**	**0**	**39**	**4**

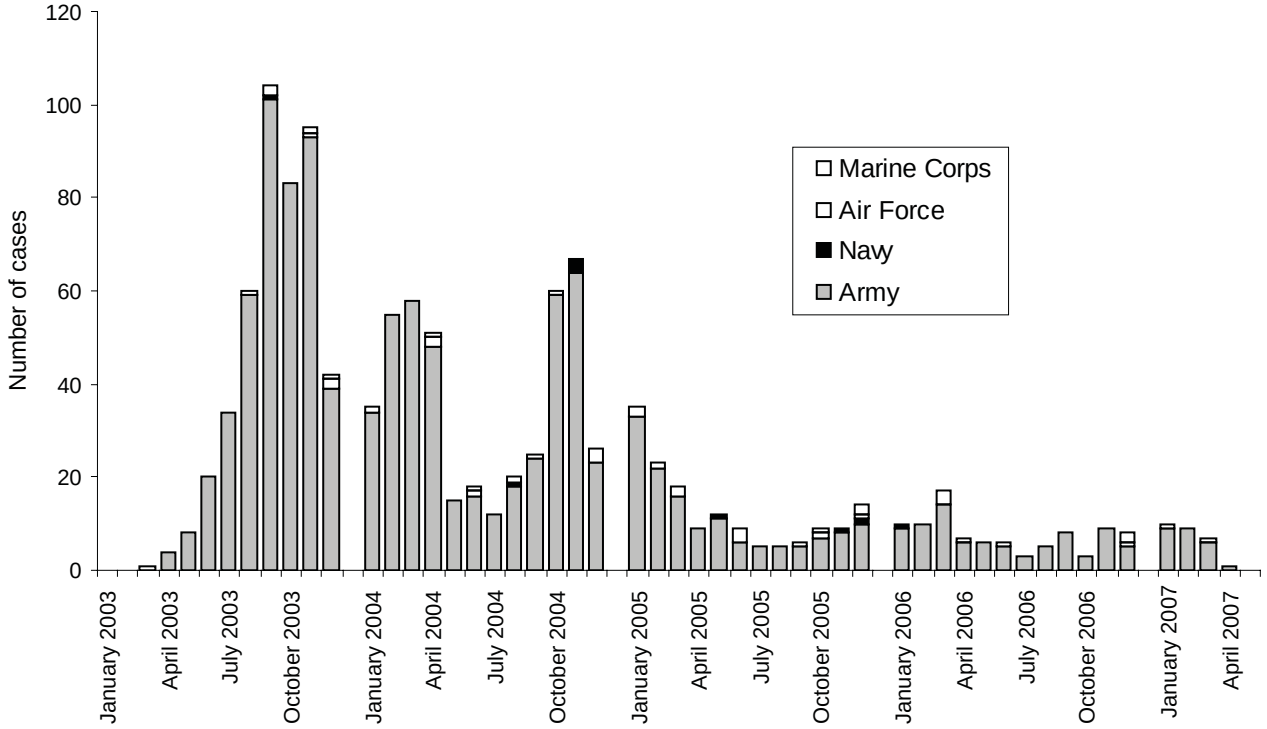
‡Primary and secondary.

§Urethritis, non-gonococcal (NGU).

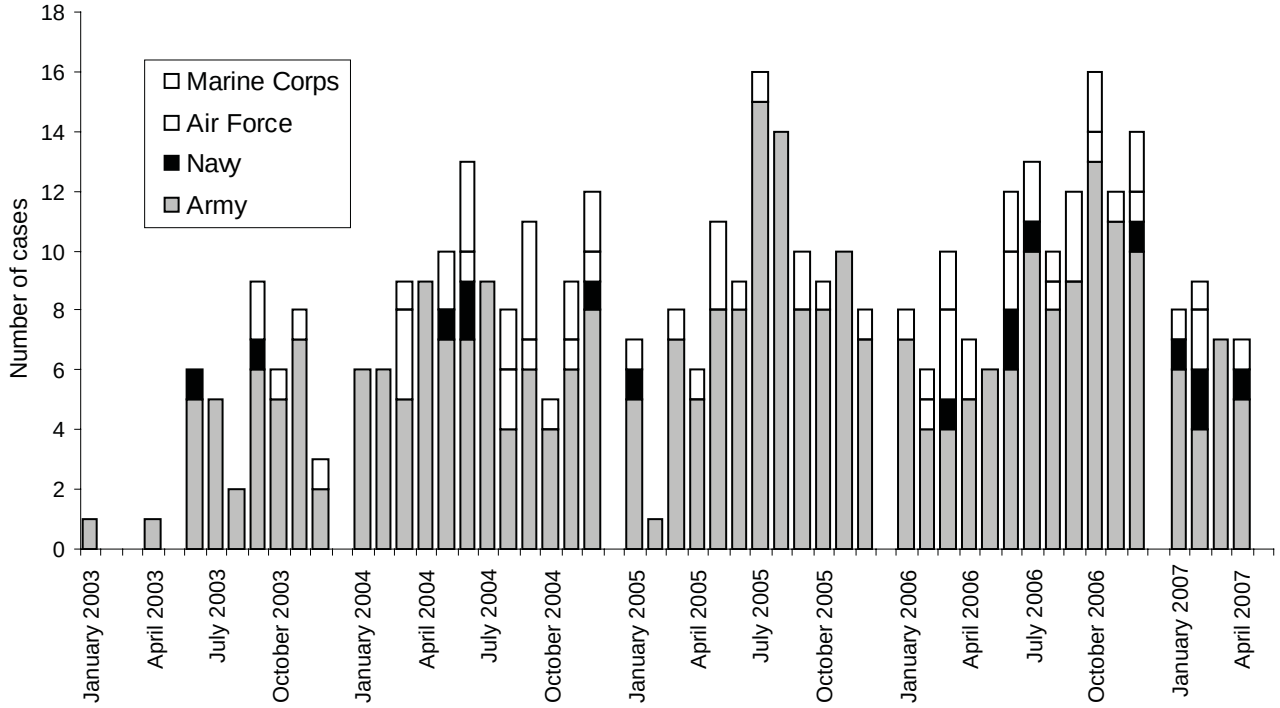
Note: Completeness and timeliness of reporting vary by facility. Only facilities that have reported events in 2006 or 2007 are listed.

Deployment related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - January 2007

Leishmaniasis (ICD-9: 085.0 to 085.9)*



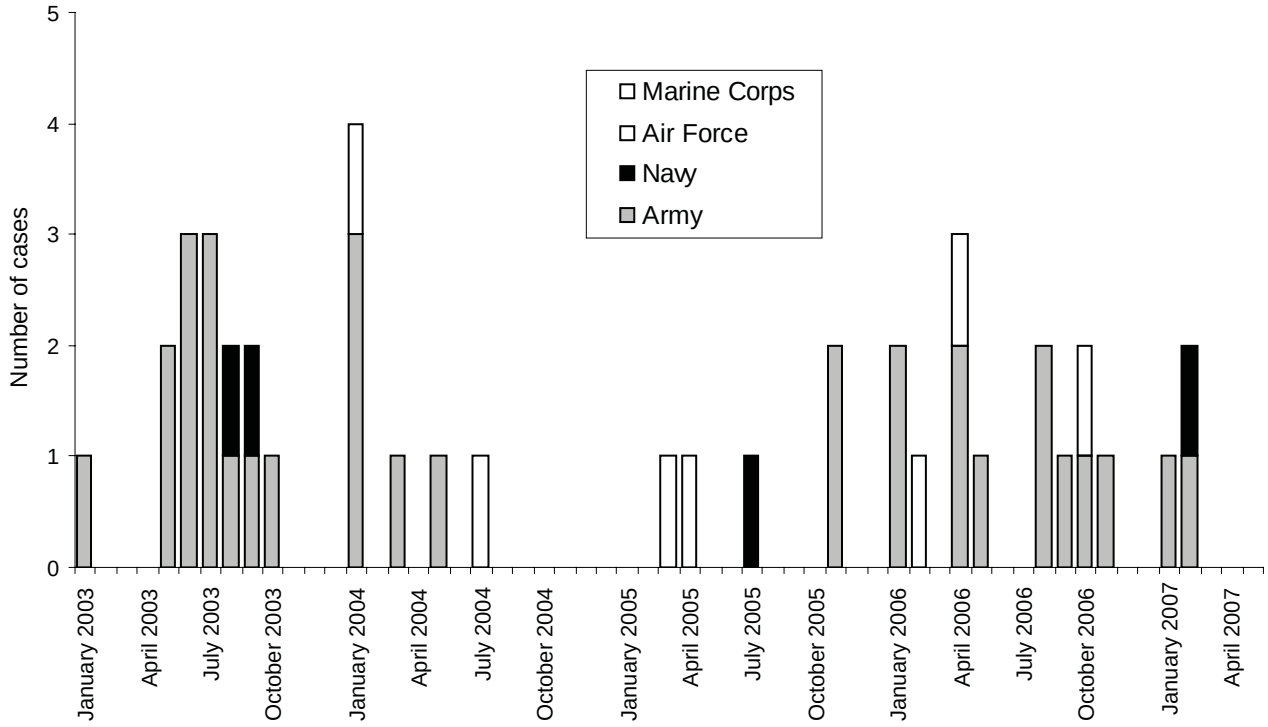
Deep vein thrombophlebitis/pulmonary embolus (ICD-9: 415.1, 451.1, 451.81)†



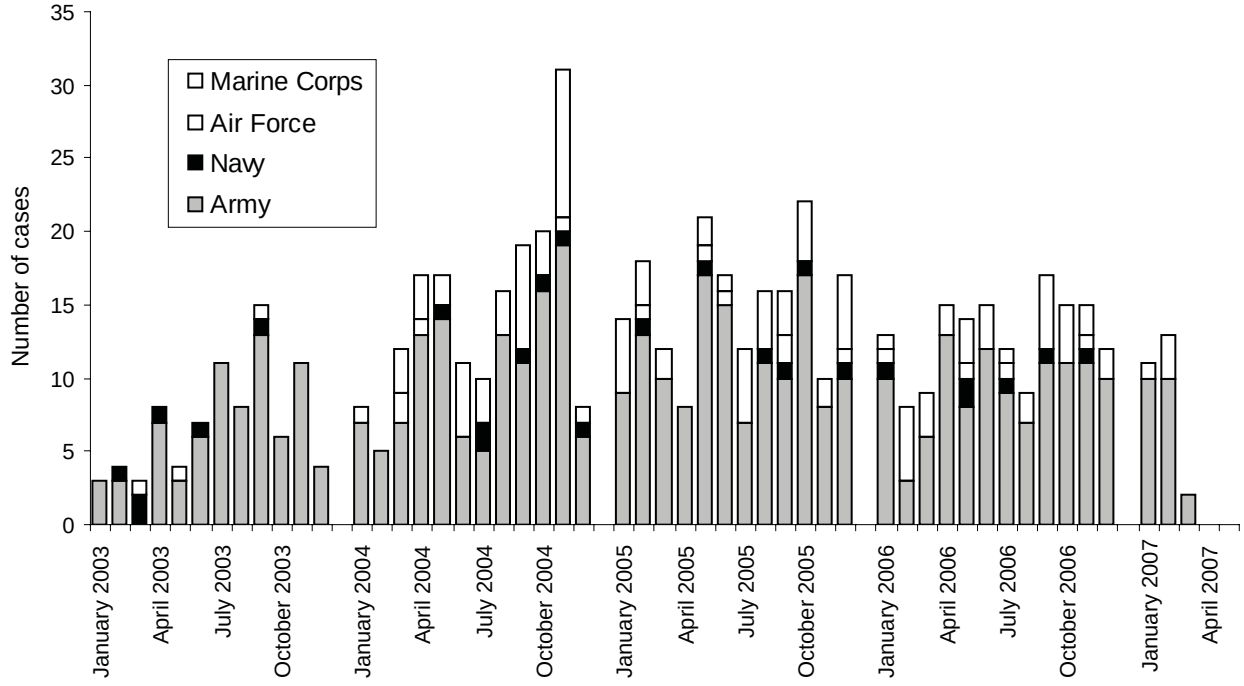
Footnotes:
* Indicator diagnosis (one per individual) during a hospitalization, ambulatory visit, and/or from a notifiable medical event during/after service in OEF/OIF.
† Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 30 days of returning from OEF/OIF.

Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - January 2007

Severe acute pneumonia* (ICD-9: 518.81, 518.82, 518.3, 480-487, 786.09)‡



Amputations (ICD-9: 887, 896, V49.6 to V49.7, PR 84.0 to PR 84.1)§



Footnotes:
‡ Indicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 30 days of returning from OEF/OIF.
§ Indicator diagnosis (one per individual) during a hospitalization of a servicemember during/after service in OEF/OIF.

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The *Medical Surveillance Monthly Report* (MSMR) is prepared by the Army Medical Surveillance Activity , Directorate of Epidemiology and Disease Surveillance, US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

Data in the MSMR are provisional, based on reports and other sources of data available to AMSA.

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